

# Programmable Power Supply System

## Abstract

A module standard for integrated circuit such as FPGAs is provided in which power supply voltages for daughtercards are not fixed in advance. Instead programmable power supplies are provided and a method is provided in which each daughtercard can specify the required power supply voltage. Thus, unlike prior-art systems, this modular system is backward and forward compatible with chips, such as FPGAs, from many process generations allowing easy upgrading as new FPGA families become available. A motherboard or baseboard for use with this invention includes a plurality of module connectors into which compatible modules or "daughtercards" can be plugged and a plurality of programmable power supplies. In a preferred embodiment there are four sets of module connectors and sixteen programmable power supplies. This allows each module to have four independently specifiable power supply voltages. A module may also connect several power supplies together in order to obtain higher current at a single voltage. Various schemes are described to ensure that the programmable power supplies will never deliver too high a voltage to

the components on the modules.